



Research project of counterparts funded at IPB

Name	Counterpart	Title
Rahayu Widyastuti	B08	Seasonal changes of soil microarthropod populations in microhabitats of oil palm plantations of Southern Sumatra

We investigated variations of soil microarthropod communities and functional properties of the soil of oil palm plantations as affected by seasonal abiotic changes. Additionally, the role of microhabitats as refuges for soil animals during climatic extremes was investigated. Four oil palm plantations in the Harapan landscape were investigated. Soil samples were taken every 30 days during a period of 12 months and soil animals were extracted by using modified Kempson extractors. Soil microarthropods from various microhabitats (e. g., shaded area, frond litter accumulation, detritus and epiphytes) were sampled once during the wet season and once during the dry season. Abundances of soil animals were counted, Collembola and Oribatida were determined to family level.

Density of Oribatida distinctly fluctuated with season. It was lowest in February, the month with the lowest precipitation. Presumably, Oribatida moved deeper into the soil during dry months to avoid harsh environmental conditions. Diversity of Oribatida also significantly varied between microhabitats. It was at a maximum in lanes where palm fronds were piled up reaching 4,560 individuals m^{-2} , whereas in open areas Oribatida density was only 1,570 individuals m^{-2} . Generally, Oribatida were dominated by Scheloribatidae, Mycobatidae and Galumnidae. Notably, patterns in Collembola resembled those in Oribatida. Overall, the results suggest that the soil decomposer community of oil palm plantations suffers from shortage in habitat and resources, and this results in decomposer communities sensitively responding to climatic variations. To foster decomposer communities and buffer effects of climatic variations residue management strategies increasing the living space of decomposers and improving food availability need to be adopted.